

Endmill with polished flute Ø8 Z1

A01-010

Endmills with polished Flute: a good possible grinding principle for manufacturing flutes with mirror finish is deep creep grinding with an adapted metalhybrid fine grid diamond wheel. The flute is usually ground in one pass, eventually a second sparkout pass can be considered. If the flute form of the Z1 endmill is not very demanding, a standard wheelform as 1A1 can be used. For some high rake geometries a 14F1 form is used. The difference of surface quality is illustrated with the pictures to the right.

Wheel grain D20



Wheel grain D64



1. Cycletime for Production

Workpiece:	Ø 8 mm, Z 1, Length of cutting edge 35 mm, Helix 30°							
Material CARBIDE								
Operations	Probe	Flute 1	Gashing	O.D.3	O.D.2	O.D.1	End 2	End 1
Feed [mm/Min]	2000	30	60	200	150	70	50	100
Power [kW]		3	2	1	1	2	1	1
Cutting speed [m/s]		30	24	20	20	30	20	30
Used wheels		1	2	3	3	4	3	4
Grinding time [s]	8	90	12	140	21	40	11	8
Total cycle time	5 Min 30							

The cycle times are indicative. Material to be ground, grinding wheels, coolants can influence the cycle times considerably.

2. Used Grinding Wheels

1	1A1 Ø100 D20 MH
2	12V9 Ø100 D46
3	11V9 Ø75 D46
4	11V9 Ø75 D20 MH



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2 1 4

3. Machine and Software Requirements

Machines: 5 axes CNC grinders : NORMA CFG

Coolant: Synthetic Oil, pressure 6 bar

Control: Fanuc 31i

Software: Quinto 5

Accessories:

Responsible engineer: OP. 6.5.13

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